

CLAIM AMENDMENTS

16. (original) A cutting element as defined in claim 12, further comprising an axially engageable structure.
17. (original) A cutting element as defined in claim 16, wherein said axially engageable structure is a generally circular groove formed in the mounting structure.
18. (original) A cutting element as defined in claim 16, further comprising a second axially engageable structure spaced from the first on the mounting structure.
19. (original) A cutting element as defined in claim 17, wherein the second axially engageable structure is a groove or recess formed in the mounting structure.
26. (original) A cutting element as defined in claim 21, wherein said axially engageable structure is a generally circular groove formed in the mounting structure.
27. (original) A cutting element as defined in claim 21, further comprising a second axially engageable structure spaced from the first on the mounting structure.
28. (original) A cutting element as defined in claim 27, wherein the second axially engageable structure is a groove or recess formed in the mounting structure.
29. (original) A cutting element as defined in claim 28, wherein the second axially engageable structure is a projecting structure formed in the mounting structure.
30. (original) A cutting element as defined in claim 29, wherein the second axially engageable structure is a circular ledge formed in the mounting structure.
51. (currently amended) A replaceable cutting element ~~suitable to be for use mounted~~

on the body of a earth-boring drag bit off center from the axis of rotation of said bit, the element comprising:

a contact structure including a cutting tip structure and a cutting tapered structure, the tip structure and the tapered structure being concentric with the overall element.

a mounting structure supporting the tip and tapered structure;

the contact structure is generally conical surrounding the tip structure ~~bilaterally~~

~~symmetric~~ with a generally obtuse included angle of the tapered structure.

52. CANCEL CLAIM 52

53. (currently amended) A cutting element as in claim 51, wherein a portion of the tip structure is harder than 92 on the Rockwell A Scale and an outer portion of the tapered structure is softer than 92 on the Rockwell A Scale.

54. CANCEL CLAIM 54

55. (currently amended) A cutting element as in claim 51, wherein the ~~tip~~ tip structure comprises a point.

56. (currently amended) A cutting element as in claim 51, including an engagable structure comprising:
a non-cylindrical surface ~~suitable for the engagement of~~ engagable by an extraction tool.

57. (original) A cutting element as set forth in claim 51, including:
a conical helical screw thread on the mounting structure concentric with the contact structure of the element.

58. (original) A cutting element as in claim 51, wherein at least a portion of said tip structure is fabricated from one of a group of materials comprising diamond, a nitride of a metallic element, a carbide of a metallic element, an oxide of a metallic element carbide, a boride of at least one metallic element, a silicide of a metallic element, and carbon nitride.

59. (currently amended) An elongated self-locking replaceable cutting element ~~suitable~~
for use mounted on the body of a rotary earth-boring drag bit off center from the
axis of rotation of said bit, the element comprising:
a contact structure comprising a cutting tip structure;
a mounting structure carrying the contact structure, and;
a conical helical screw thread on the mounting structure wherein the cutting tip
structure and the mounting structure are formed generally along the same
axis, and a portion of said cutting tip structure is generally bilaterally
symmetrical in at least
three equally spaced radial directions from the axis of the element.
60. (currently amended) A cutting element as claimed in claim 59, wherein the included
angle of the conical helix is between $\frac{1}{2}^{\circ}$ and 60° .
61. (currently amended) A self-sharpening rotatable cutting element ~~suitable~~ for use
~~mounted~~ on the body of an earth-boring drag bit off center from the axis of rotation
of said bit, the element comprising:
a contact structure including a cutting tip structure and a cutting tapered structure
formed generally along the same axis;
a mounting structure carrying said cutting tip and tapered structure;
a non-cylindrical structure for the engagement and removal of the element;
a first material of wear resistance on the cutting tip, and;
a second region of material of a second wear resistance on the tapered structure fully
surrounding and supporting the first material wherein the wear resistance of
said first material is greater than the wear resistance of said second material,

said tapered structure surrounds and generally converges with said tip structure; ~~and,~~

a portion of said first material is generally contained within said second material;₁

a portion of the mounting structure is generally symmetrical in at least three equally spaced radial directions₁ and;

the axis of the mounting structure is generally aligned with the axis of the tapered structure.

62. (original) A cutting element as in claim 61, wherein said first material is in the form of a column positioned on the axis of the contact structure.
63. (previously amended) A cutting element as in claim 61 wherein the cross-sectioned area of said material of first hardness is less than 10% of the total cross-sectioned areas of the contact structure.
64. (original) A cutting element as in claim 61, wherein the material of wear resistance on the tapered structure is at least 300 points softer than the wear resistant material of the cutting tip.

REMARKS

The rejection of Claims 51, 52, and 55, under §102(b) as being anticipated by Mills is respectfully traversed. Mills element 48 is non-analogous to drag bit cutting elements.

The Mills element 48 is not a drag bit cutting element, but rather a “pilot bit” (see column 5, lines 1-8). Claim 51 has now been amended to define “a replaceable cutting element for use mounted on the body of an earth boring drag bit...”. This amended wording now clearly limits the use of the element to a drag bit function which experiences entirely